

What is claimed is:

1. A gateway in a communication system, the gateway comprising:  
a main state machine adapted to process a plurality of different type supplemental services with a single process.
2. The gateway of claim 1, further comprising:  
an event converter adapted to convert received messages based on a type of terminal alerting signal into unique events for the main state machine.
3. The gateway of claim 1, further comprising:  
an action converter adapted to convert outputs of the main state machine to either a send ring command or a play tone command.
4. The gateway of claim 1, wherein the plurality of types of supplemental services are selected from a group consisting of dual tone alerting signal (DT-AS), ring pulse alerting signal (RP-AS), line reverse + dual tone alerting signal (LR + DT-AS), line reverse (LR), line reverse + ring pulse alerting signal (LR + RP-AS) and dual tone alerting signal - off hook (DT-AS-Offh).
5. The gateway of claim 1, further comprising:  
a secondary state machine adapted to process supplemental services related to line polarity, the secondary state machine being under the control of the main state machine.
6. The gateway of claim 5, further comprising:  
a line reverse event converter adapted to convert signals from the main state machine into restore and reverse signals that are coupled to the secondary state machine.
7. The gateway of claim 5, further comprising:  
a line reverse controller coupled to the secondary state machine and adapted to control the polarity of communication lines.

8. A voice over IP gateway for a telecommunication system, the gateway comprising:
  - a main state machine adapted to process a plurality supplemental services; and
  - a secondary state machine adapted to control the polarity of a transmission line, the secondary state machine being controlled by the main state machine.
9. The gateway of claim 8, further comprising:
  - a timer manager coupled to the main state machine and the secondary state machine.
10. The gateway of claim 8, further comprising:
  - a timer converter coupled to the main state machine.
11. The gateway of claim 8, further comprising:
  - a line reverse controller coupled to the secondary state machine, the line reverse controller adapted to control the polarity of the transmission line.
12. The gateway of claim 8, wherein the plurality of types of supplemental services are selected from a group consisting of dual tone alerting signal (DT-AS), ring pulse alerting signal (RP-AS), line reverse + dual tone alerting signal (LR + DT-AS), line reverse (LR), line reverse + ring pulse alerting signal (LR + RP-AS) and dual tone alerting signal - off hook (DT-AS-Offh).
13. The gateway of claim 8, further comprising:
  - an event converter adapted to convert received messages based on a type of terminal alerting signal and a select input into unique events for the main state machine;
  - an action converter adapted to convert select outputs of the main state machine to either a send ring command or a play tone command; and
  - a line reverse event converter adapted to convert signals from the main state machine into restore and reverse signals that are coupled to the secondary state machine.

14. The gateway of claim 13, further comprising:  
a pre-processing controller adapted to compute process variables for the event converter, the action converter and the line reverse converter.
15. A method implementing a voice over IP gateway in a communication system, the method comprising:  
supporting a plurality of different types of supplemental services with a single process.
16. The method of claim 15, wherein the single process comprises:  
receiving a supplemental service signal;  
computing a process variable based on the supplemental service signal;  
converting the process variable and a select input into a unique event signal;  
processing the unique event signal;  
sending a signal to a select terminal equipment based on the processed unique event signal; and  
providing associated supplemental service data to the select terminal equipment.
17. The method of claim 15, wherein supporting a plurality of different types of supplemental services with a single process further comprises:  
signaling a first type of supplemental services with a first state machine; and  
signaling a second type of supplemental services with a second state machine that is synchronized with the first state machine.
18. The method of claim 17, further comprising:  
controlling the second state machine with the first state machine.
19. The method of claim 17, wherein the signals used in the signaling of the first type of supplemental services with the first state machine are selected from a group of signals consisting of a dual tone alerting signal (DT-AS) and a ring pulse alerting signal (RP-AS).

20. The method of claim 17, wherein the signal used in signaling the second type of supplemental services with the second state machine is a line reverse (LR) signal.
21. The method of claim 17, further comprising:  
sending service data with the first state machine.
22. A method of providing a plurality of supplemental services through a voice over IP gateway, the method comprising:  
receiving a supplemental service signal;  
computing a process variable based on the supplemental service signal;  
converting the process variable and a select input into a unique event signal;  
processing the unique event signal;  
sending a signal to a select terminal equipment based on the processed unique event signal; and  
providing associated supplemental service data to the select terminal equipment.
23. The method of claim 22, further comprising:  
acknowledging the signal based on the processed unique event signal.
24. The method of claim 22, wherein the supplemental service signal is selected from a group consisting of dual tone alerting signal (DT-AS), ring pulse alerting signal (RP-AS), line reverse + dual tone alerting signal (LR + DT-AS), line reverse (LR), line reverse + ring pulse alerting signal (LR + RP-AS) and dual tone alerting signal - off hook (DT-AS-Offh).
25. The method of claim 22, wherein processing the unique event further comprises:  
outputting the signal based on the event signal and a select state.
26. The method of claim 25, wherein the select states is selected from a group of states consisting of idle, pre-signal (pre-sgn), signal (sgn), wait for acknowledgement

(WtAck), pre-data, data and post data.

27. The method of claim 22, wherein processing the unique event further comprises:  
using a first state machine adapted to cover DT-AS/RP-AS and data transmission scenarios.
28. The method of claim 27, further comprising:  
using a second state machine adapted to cover line reverse signals.
29. The method of claim 28, further comprising:  
synchronizing the second state machine with the first state machine.
30. A computer –usable medium having computer-readable instructions stored thereon for execution by a processor to perform a method comprising:  
supporting a plurality of different types of supplemental services with a single process.
31. The computer-usable medium of claim 30, wherein the single process comprises:  
receiving a supplemental service signal;  
computing a process variable based on the supplemental service signal;  
converting the process variable and a select input into a unique event signal;  
processing the unique event signal;  
sending a signal to a select terminal equipment based on the processed unique event signal; and  
providing associated supplemental service data to the select terminal equipment.
32. The computer-usable medium of claim 30, wherein supporting a plurality of different types of supplemental services with a single process further comprises:  
signaling a first type of supplemental services with a first state machine; and  
signaling a second type of supplemental services with a second state machine that is synchronized with the first state machine.

33. The computer-usable medium of claim 32, further comprising:  
controlling the second state machine with the first state machine.
34. The computer-usable medium of claim 32, wherein the signals used in the signaling of the first type of supplemental services with the first state machine are selected from a group of signals consisting of a dual tone alerting signal (DT-AS) and a ring pulse alerting signal (RP-AS).
35. The computer-usable medium of claim 32, wherein the signal used in signaling the second type of supplemental services with the second state machine is a line reverse (LR) signal.
36. The computer-usable medium of claim 32, further comprising:  
sending service data with the first state machine.